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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/813,303	03/21/2001	Seiichi Banba	010377	1802
38834	7590	08/23/2004	EXAMINER	
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036			SHINGLETON, MICHAEL B	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/813,303	BANBA ET AL.	
	Examiner	Art Unit	
	Michael B. Shingleton	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) 6,7,9-11 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,8,13, 14 and 16-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vinn et al. 4,717,888 (Vinn) in view of Shaw 2,787,560 (Shaw) and Stegens 3,940,706 (Stegen).

Note Figure 1 and elements 30d and 20 therein of Vinn. Element 20 is clearly a transistor having a first terminal for receiving an input signal and having a second terminal and a third terminal. Element 30d that forms either the first or the second circuit as recited by the claims is in fact a thin film resistor (See column 4, around line 24.). Vinn is silent on the frequency range of operation and the use of thickness of the thin film resistor being smaller than three times its skin depth at the operating frequency range. Since Shaw is silent on the operation frequency range, clearly the device of Shaw can be operated at any conventionally known operation frequency range for amplifiers. Operating in the microwave range of 1+ GHz is a conventional frequency range of operation for an amplifier as evidenced by Stegens. Note column 1, around line 6, and column 3 around line 5. Also note the CE configuration in Stegens (See Figure 10 for example.). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the amplifier of Vinn at the microwave range because, as the reference is silent on the operating range one of ordinary skill in the art would have been motivated to any convention frequency range of operation such as the well-known microwave 1+GHz operation range as taught by Stegens.

Shaw teaches that "[I]n order for metal film resistors to be fully useful for microwave work it is necessary that the film be a relatively small fraction of the skin effect depth for such wavelengths.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the thickness of the thin film resistor to be less than three times its skin depth at the microwave frequency so as to have the resistor be fully useful for microwave work as taught by Shaw.

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Claims 1-5, 8, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holt page 384 of Electronic Circuits" (Holt) in view of Vinn et al. 4,717,888 (Vinn), Stegens 3,940,706 (Stegen) and Shaw 2,787,560 (Shaw).

The claimed and elected invention represented by Figures 1 and 13 of the instant application presents a CE amplifier wherein the resistor connected to the collector, i.e. "321" or "30" is a thin film resistor.

Figure 13-1 of Holt discloses the "typical" CE amplifier clearly having the same basic structure of the instant elected and claimed invention. Holt is silent on the use of a thin film resistor(s) for at least resistor R4 that is connected to the collector of the transistor. Note that a parallel combination or a series combination of resistors is well known art recognized equivalents to a single resistor. Thus the use of resistors in place of a resistor would have been obvious to one of ordinary skill in the art at the time the invention was made because these structures are art recognized equivalents. Holt is also silent on the operating frequency range. Since the basic structure of Holt is the same as that of the elected invention represented by Figures 1 and 13 at least one of these four resistors are seen as providing the feedback circuit in the manner meant by applicant.

In CE configurations like Holt, Vinn teaches that it is well known to those of routine skill in the art to utilize a thin film resistor "30d" for the resistor connected to the collector of the transistor 20. Thin film resistors have lower inductance over discrete units. In other words these resistors are more like ideal resistors compared to the discrete units, i.e. there is an enhanced frequency response because these elements do not have or have lower reactive components. This clearly is one reason why Vinn employs thin film resistors for the resistor connected to the collector of the transistor. Another reason is that the thin film resistor is integrable. Further still another reason Vinn employs thin film resistors as is common knowledge to those of ordinary skill in the art is that these elements are easily trimmable in the integration process, i.e. their values can be made very accurate (adjusted). All these reasons that are common knowledge to those of ordinary skill in the art makes the use of these thin film resistors highly advantageous in amplifier circuits.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use thin film resistor(s) for the resistor connected to the collector in Holt so as to decrease or eliminate frequency effects, i.e. make for a more ideal resistor, allow for integration and trimmability as taught by Vinn.

As to the claimed "no frequency dependency", as noted in previous Office actions no element is ideal, not even applicant's thin film resistor. Therefore, since no discrete measurable

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range is neither claimed nor any discrete structure that defines or definition in the specification that defines "no frequency dependency" exists, the thin film resistors mentioned above and made obvious below are seen as meeting this "limitation". Since Holt is silent on the operation frequency range, clearly the device of Holt can be operated at any conventionally known operation frequency range for the CE amplifier or CE based differential amplifier. Operating in the microwave range of 1+ GHz range for an amplifier is a conventional frequency range of operation for an amplifier as evidenced by Stegens.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the amplifier of Vinn at the microwave range because, as the reference is silent on the operating range one of ordinary skill in the art would have been motivated to use any conventional frequency range of operation such as the well-known microwave (1MHz) operation range as taught by Stegens.

Shaw teaches that "[I]n order for metal film resistors to be fully useful for microwave work it is necessary that the film be a relatively small fraction of the skin effect depth for such wavelengths."

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the thickness of the thin film resistor to be less than three times its skin depth at the microwave frequency so as to have the resistor be fully useful for microwave work as taught by Shaw.

Claims 13 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holt page 384 of Electronic Circuits" (Holt) in view of Vinn et al. 4,717,888 (Vinn), Stegens 3,940,706 (Stegen) and Shaw as applied to claims 1-5, 8, and 14 above, and further in view of Campbell et al. 5,546,033 (Campbell).

The reasoning as presented with respect to claims 1-5, 8 and 14 above as rejected under 35 USC 103 and the following: Claims 16-19 set forth the limitations on the thin film resistors as being of "a metal or a metal compound" that includes the likes of "aluminum, titanium or tantalum", or "semiconductor". Holt and Vinn are silent on the use of these compositions to make up a thin-film resistance.

Figure 3 of Campbell discloses the use of a thin film resistance element 311 connected to a transistor can take the form a thin film resistor whose thin film can be a "polycrystalline silicon" i.e. semiconductor, or a tantalum metal. These are art recognized equivalent materials used to make up a thin film resistor.

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Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted conventional semiconductor or metals like tantalum in place of the generic thin film layer of Holt in view of Vinn, as these references are silent as to the material forming the thin film resistor, one of ordinary skill in the art would have been motivated to use any art-recognized material, such as that disclosed by Campbell.

Response to Arguments

Applicant's arguments filed 6-7-2004 have been fully considered but they are not persuasive.

Applicant states: "Shaw (U.S. Patent No. 2,787,560) discloses that "in order for metal film resistors to be fully useful for microwave work it is necessary that the film be a relatively small fraction of the skin depth for such wavelength." However, this discloses merely indicates that the film thickness is very thin as compared to the skin depth. Shaw fails to disclose the subject matter of the present invention utilizing such a characteristic that the resistance value of a metal film resistor having a certain film thickness is changed with respect to a frequency by a skin effect." However, the claims do not recite and are not limited to "the resistance value of a metal film resistor having a certain film thickness is changed with respect to a frequency by a skin effect." Applicant's arguments are simply not commensurate with what is claimed. The claims recites "wherein said one or plurality of thin film resistors have a thickness smaller than three times its skin depth at a predetermined frequency in the range of 1 GHz to 10 GHz." A small fraction of the skin depth is "a thickness smaller than three times its skin depth". Furthermore, because of the composition of Shaw and the above fact that Shaw has the condition set forth by applicant above, i.e. "a thickness smaller than three times its skin depth at a predetermined frequency" in the microwave range, it appears that Shaw would inherently have the unclaimed function above and applicant has not pointed to any differences in structure or to anything in Shaw that would prevent Shaw from having this unclaimed feature even if it was claimed. Applicant is also silent on the use of resistors for a resistor as recited in the previous and present rejections.

Applicant states: "This amendment is based on the grounds that the effect of the present limitation, i.e., the improvement of the reduced gain in a high frequency region is notable exhibited in the range of " 10^9 Hz to 10^{10} Hz" on the abscissa axis of Fig. 2 or 3, specifically around greater than 10^9 in Fig 3." Applicant has not provided any showing of unexpected results. While drawings are not to scale, it appears to the examiner that at most the gain goes from "10" to

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"10.8". Furthermore, this improvement appears to be an obvious consequence of the prior art and it is noted that applicant has not provided any evidence or convincing reasoning as to why the obvious combination operated at the low GHz frequencies would not provide for an "improvement of the reduced gain".

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

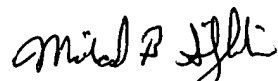
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is (571)272-1770. The examiner can normally be reached on Tues-Fri from 8:30 to 4:30. The examiner can also be reached on alternate Mondays. The examiner normally has second Mondays of the bi-week off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (571)272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MBS
August 12, 2004


MICHAEL B. SHINGLETON
PRIMARY EXAMINER
GROUP ART UNIT 2817